

# Urbanization and Prime Agricultural Land Loss in the North Alabama Region: A Remote Sensing and Geographic Information System Based Study

## United States Department of Agriculture (USDA)/NIFA Project Directors' Conference, September 16-19, 2012

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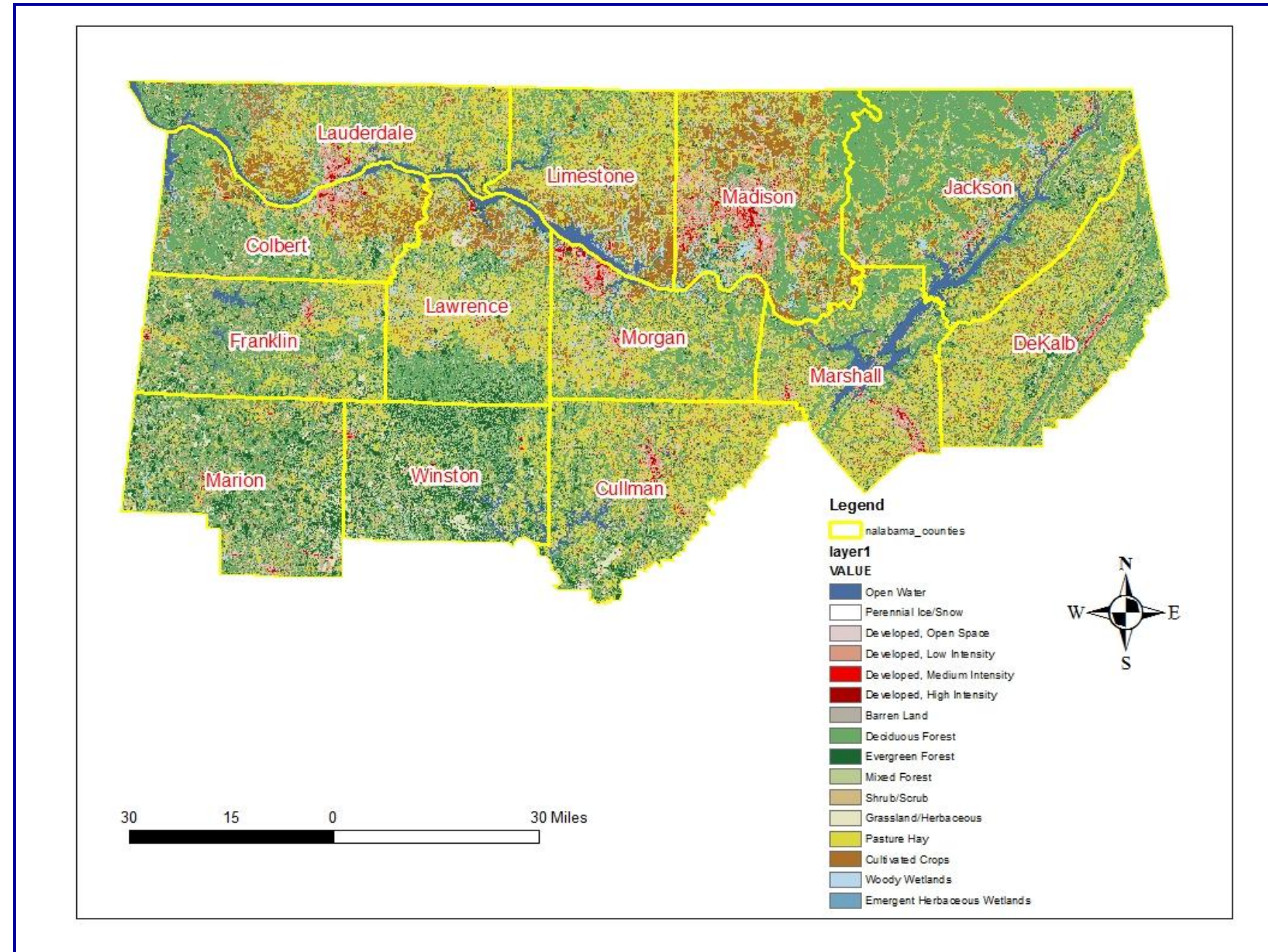
### PROJECT DESCRIPTION

The aim of this study is to analyze urban expansion and loss of prime agricultural land in the North Alabama Region. This study focuses on land use/land cover changes, specifically on agricultural land loss as a result of urbanization in the North Alabama Region over the last three decades. The patterns of the agricultural land loss for the study area are being analyzed utilizing historical aerial photographs, satellite imageries for the period of 1980-2010, and a trend analysis of socio economic changes. The study is being conducted by researchers from The Departments of Community and Regional Planning, and Biological and Environmental Sciences at Alabama A&M University. A three year grant (2011-2014) from the United States Department of Agriculture /National Institute of Food and Agriculture (USDA-NIFA) supports this project.

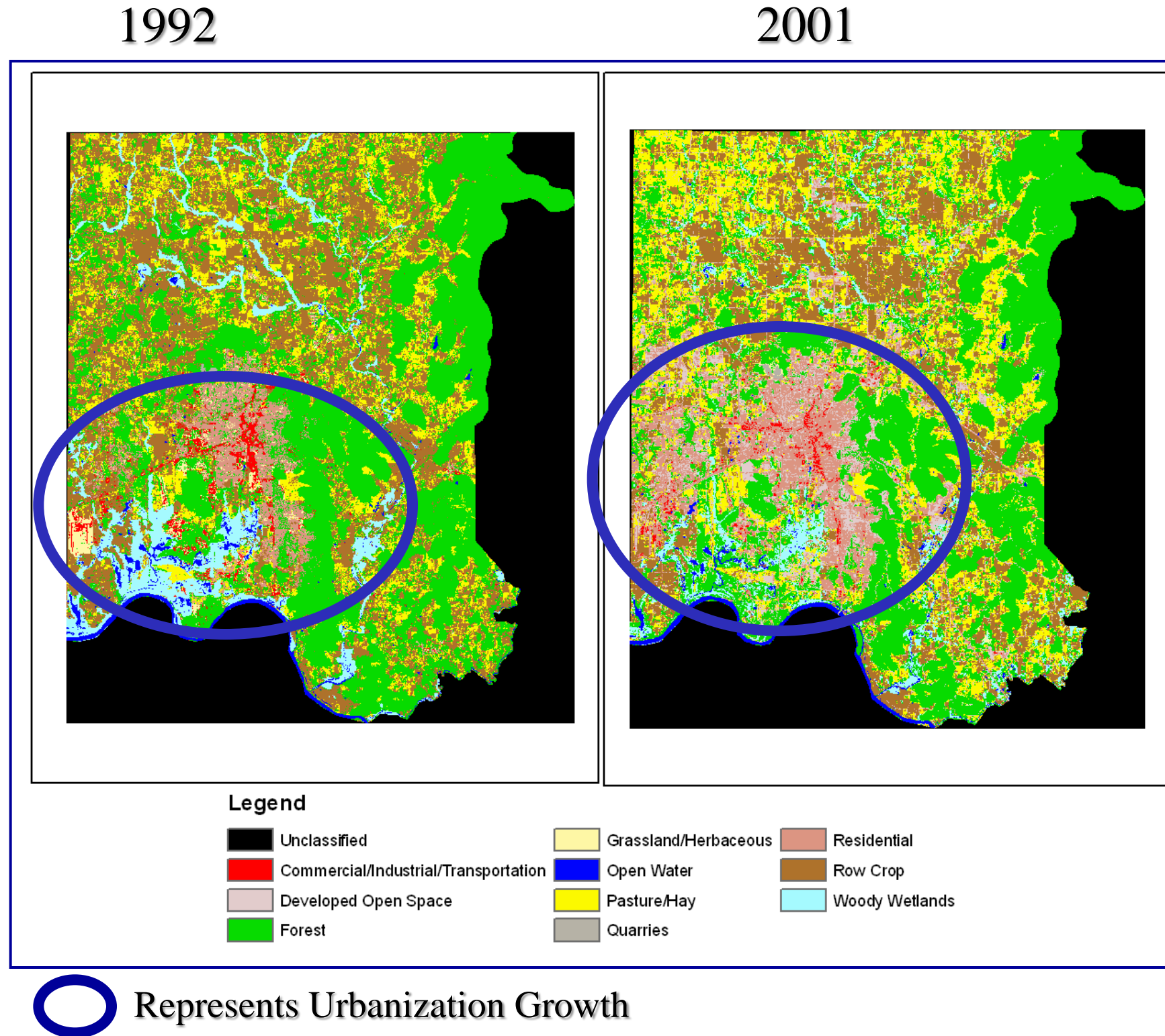
### OBJECTIVES

- Assess and examine the extent/rate of prime agricultural land loss as a result of urbanization in the North Alabama Region over the last three decades;
- Document demographic and socioeconomic trends that attribute to rapid urbanization;
- Develop a comprehensive digital geographic/attribute database as a bench-mark data source;
- Compare spatial and temporal urbanization patterns and associated rural land use and land cover change;
- Model and project future loss of prime agricultural land loss given current trends; and
- Train high school teachers and underrepresented minority students the newest advanced concepts of mapping and digital cartography principles, fundamental concepts of Geographic Information Systems (GIS) and basic land planning and environmental conservation principles.

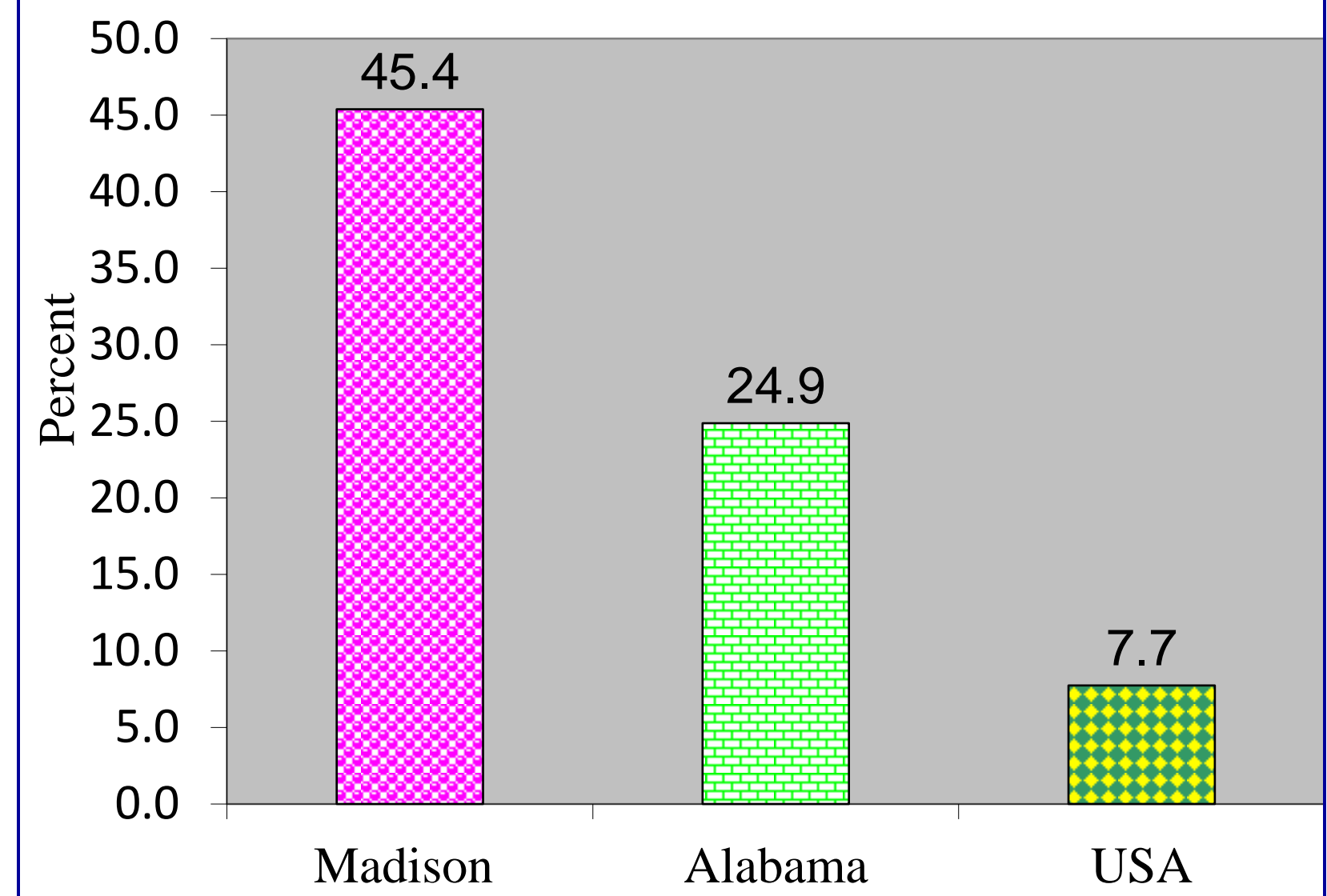
**Figure 1: The North Alabama Region**



**Figure 2: Land Use and Land Cover Change in Madison County, Alabama**

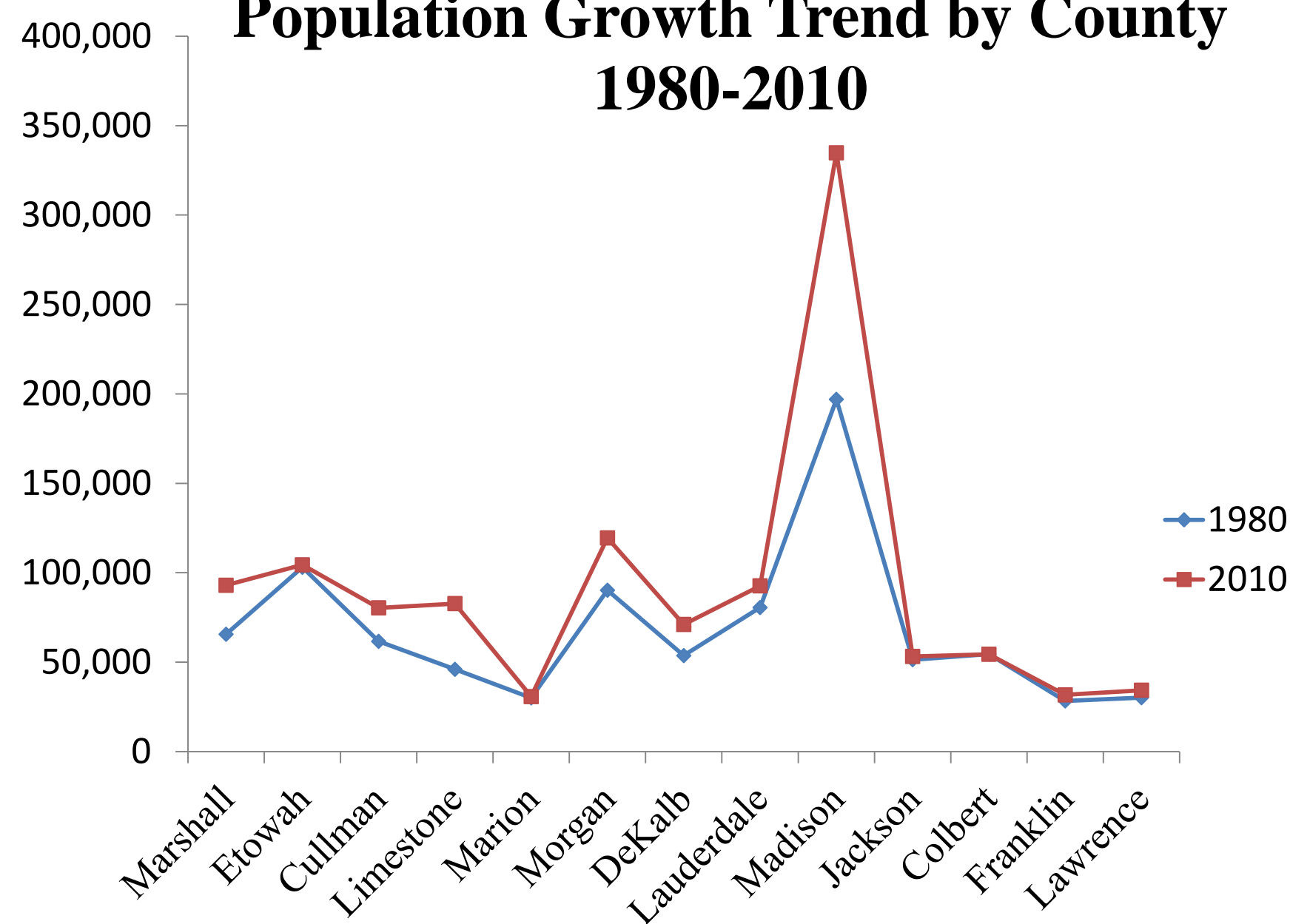


**Figure 3: Madison County Farm Land Loss Compared to Alabama and U.S.A., 1974-2002**

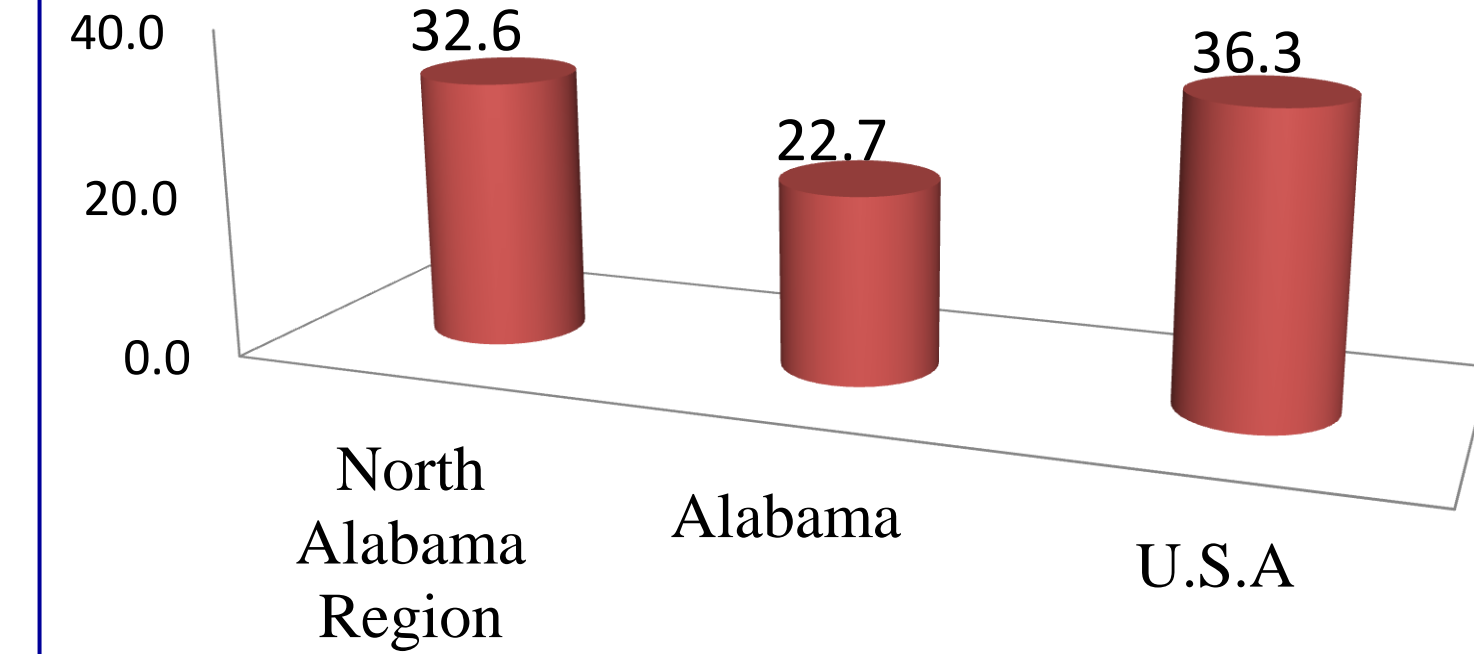


### Population Growth

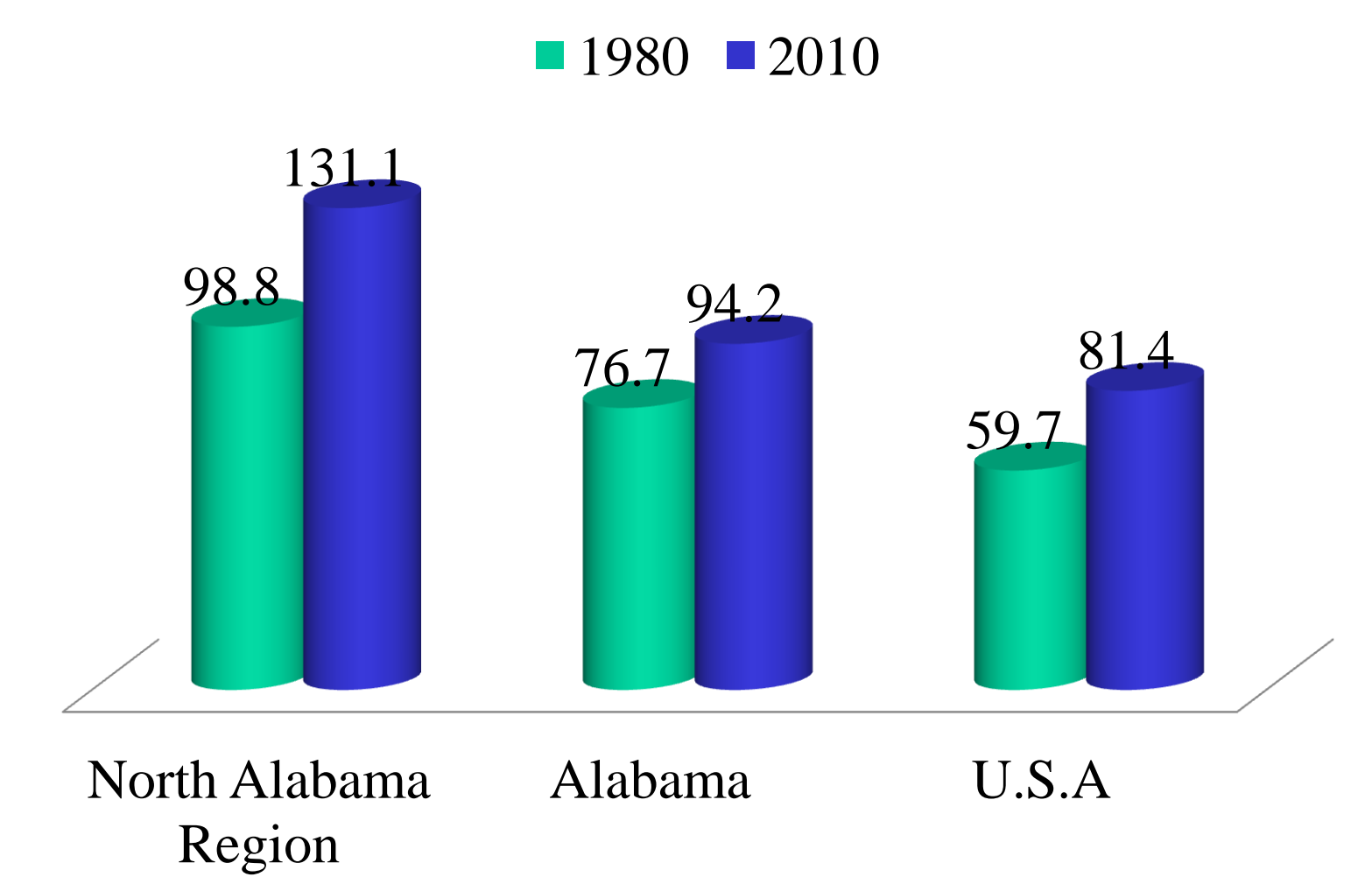
**Figure 4: North Alabama Region Population Growth Trend by County 1980-2010**



**Figure 5: Population Growth and Percent Change : North Alabama Population, Alabama, and U.S.A., 1980-2010**



**Figure 6: Population Density Changes (1980 – 2010) Comparison of North Alabama Region, Alabama, and U.S.A.**



### 2012 High School Summer Research Apprentices & Environ-Mentees

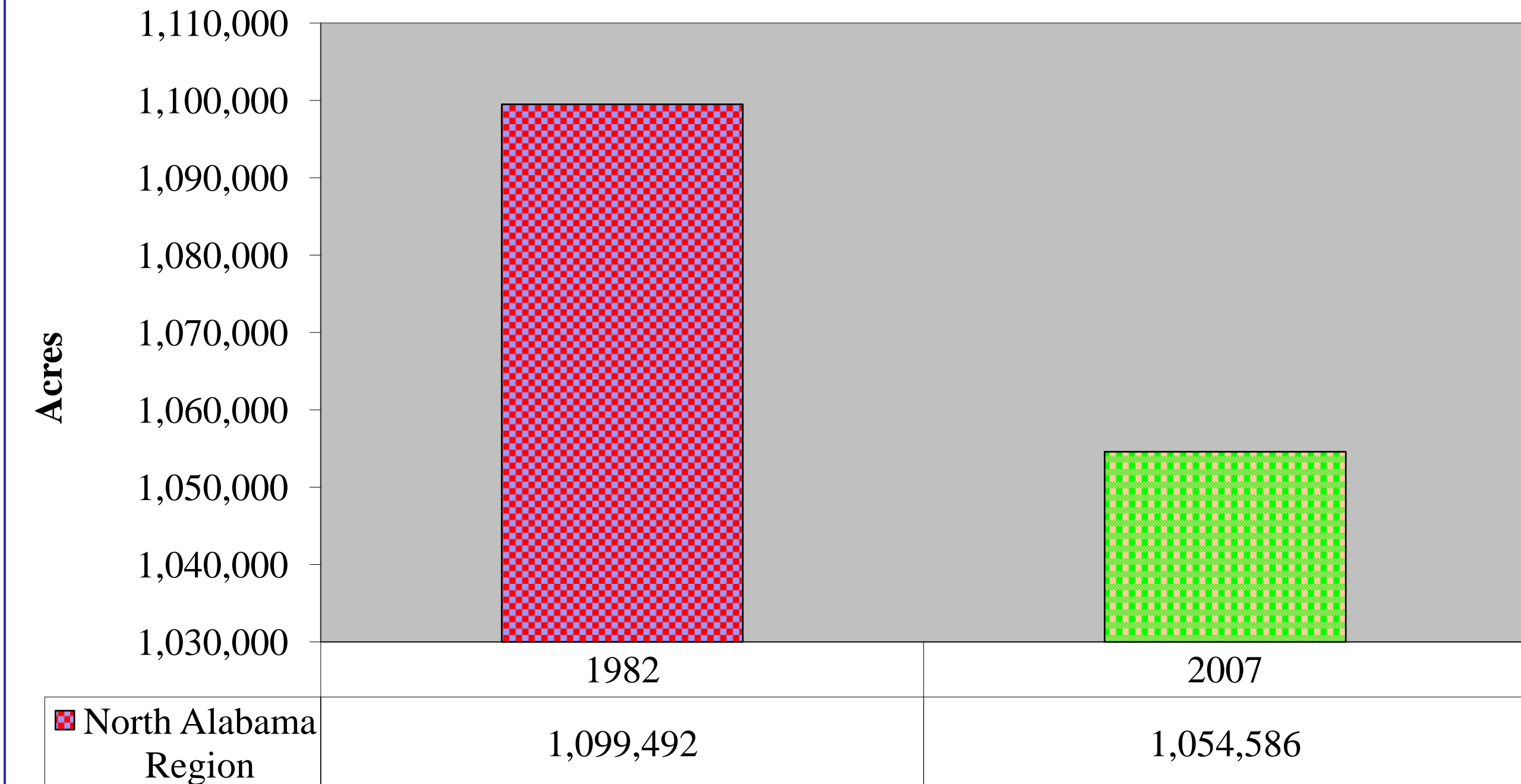


The Enviro-Mentees is a college access program that prepares minority and underrepresented students for college degrees in scientific and environmental fields.

**AAMU Student Researchers**  
Breanna Cobb "Undergraduate Student"  
Michael Knotts "Undergraduate Student"  
Rafaela McCoy "Undergraduate Student"  
Aldon O'Bryant "Graduate Student"

### North Alabama Region Agricultural Land Conversion

**Figure 7: North Alabama Region Prime Agricultural Land Loss (Cropland), 1982-2007**



Sources: US Census of Population and Housing (1980 – 2010) & the American Community Survey (2010); USDA Census of Agriculture (1982-2007)

### Preliminary Findings

- Between 1980-2010, the North Alabama Region population has grown from 892,241 to 1,183,123 an increase of 290,989 (32.6%) persons. The highest growth was in the Huntsville Metropolitan Area (Madison and Limestone Counties). During the same period the region's population growth was higher than Alabama's by 9.9%.
- The North Alabama Region's population density has increased by 32.3 persons per square mile (from 98.8 persons per square mile to 131.1 persons). Also the figure shows the region was more densely populated in 1980 and 2010 than the State and U.S.A.
- In the North Alabama Region, the acreage of cropland decreased (1982-2007) by 4.9%.
- The most highly urbanized County in the region (Madison County) has lost 45.4% of its farmland, while the State and U.S lost 24.9% and 7.7% respectively.